**Survey on impact of Fall Armyworm**

**In Ghana and Zambia**

|  |
| --- |
| “Good morning/afternoon. We are coming from CABI with permission from the local government. We are conducting a survey looking at **the impact of pests and diseases**. We would like to ask you some questions that should take no more than one hour of your time. We would like to share some of this information widely in order that more people understand what practices farmers implement and the way they implement them.  We would like to interview farmers that make the decision re crop management.  Your name will not appear in any data that is made publicly available. The information you provide will be used purely for research purposes; your answers will not affect any benefits or subsidies you may receive now or in the future. Do you consent to be part of this study?”  **Does the household consent to provide information Yes ( ), NO ( )**  **Automatic ID generated per questionnaire to link with final question on questionnaire about field sample collected** |
|
|

**Section 0 - Screening questions**

*This section will help the enumerators to record if the farmer interviewed has seen FAW in his/her field or if not.*

1. Do you grow maize?
2. Yes [ ] continue with 2
3. Not [ ] continue with 7
4. Did you experienced any crop health problem for maize in the last cropping season?
5. Yes [ ] continue with 3
6. No [ ] continue with 7
7. Have you seen this problem on your maize before?

*Shows to the farmer the pictures illustrating presence of FAW at different reproductive stages and and ask if he/she recognises any.* (multiple choice)

[ ] 1.Young caterpillars [ ] 2. Leaves with external feeding creating “windowing” effect [ ] 3. Damage near the funnel

[ ] 4. Caterpillar with Y on head [ ] 5. Larva within leaves with deep feeding [ ] 6. Holes on maize cobs [ ] 7.Larva feeding on cob

**If answer to question 3 is ‘NO’, go to question 7.**

1. What do you call this problem in your area?

[free text space for local name of pest]

*Add local name to all yellow highlighted area in the survey*

1. When did you see this pest called fall armyworm and locally called “add local name”, for the first time in maize?
2. This cropping season *do not continue with section 2 and other sections*
3. The previous cropping season
4. A few cropping seasons ago
5. Have you seen it also in this cropping season?

Yes [ ]

No [ ]

1. Have you seen this problem on the crops you grow?

*Shows to the farmer the pictures illustrating presence of FAW at different reproductive stages and and ask if he/she recognises any.* (multiple choice)

[ ] 1.Young caterpillars [ ] 2. Caterpillar with Y on head [ ] 3. FAW larva [ ] 4. Caterpillar with spots on front

Tick boxes (any boxes ticked will automatically mean YES, and move onto next question (8); need option for “no boxes ticked”

Those who tick “NO” in question 7, move to next section 1 if they answered question 1 or 2 with “YES”. If they answered question 1, question 2 or question 3 with a “NO”, terminate the survey.

7a. What do you call this problem in your area? *This question only appears if it hasn’t been asked in question 4 (i.e is participant has answered YES to question 1, 2 and 3*

[free text space for local name of pest]

*Add local name to all yellow highlighted area in the survey*

1. On what other crops do you have seen this crop health problem called fall armyworm or ‘add local name’?
2. Cotton
3. Rice
4. Sugarcane
5. Sorghum
6. Tomatoes
7. Weeds
8. Other (specify)

*Ask for each of the crops selected in 8*

1. When have you seen for the first time the presence of this crop health problem called fall armyworm and locally called “ADD local name” in *[name of crop indicated in 8]*?
2. This cropping season
3. The previous cropping season
4. A few cropping seasons ago

10 How much did you harvest of [*ODK should include name of crop selected in question 8 – except weeds*] the last season?

*Use same unit in 4.2*

1. [ ] n.
2. Unit *use same menu of choices for units*

11 How much [*ODK should include name of crop selected in question 8 – except weeds*] do you think you would have harvested without FAW or “ADD local name“ ?

*Use same unit in 4.2*

1. [ ] n.
2. Unit *use same menu of choices for units*

**Section 1 – Data Handlers**

|  |  |
| --- | --- |
| Date (dd/mm/yyyy) |  |
| Enumerator name |  |
| Supervisor name |  |
| Zone/Province/County |  |
| District |  |
| Administrative post/sector |  |
| GPS coordinates (WGS84) | N: \_\_\_\_\_\_\_\_\_\_\_\_\_GPSN  S: \_\_\_\_\_\_\_\_\_\_\_\_\_GPSS  E: \_\_\_\_\_\_\_\_\_\_\_\_\_GPSE  W: \_\_\_\_\_\_\_\_\_\_\_\_\_GPSW |

**Section 2: Household Respondent**

*Ideal respondent: household head and/or spouse or a household member that takes decisions with respect to crop management.*

2.1 Name of (main respondent):

* 1. First name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  2. Family name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  3. Phone number (1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Would you be willing to provide your phone number for follow up questions if any? If yes, ask for the phone number.*

2.2 Sex of the respondent:

1. [ ] MALE

2. [ ] FEMALE

2.3 Is the respondent the head of household?

1. [ ] YES continue with section 3
2. [ ] NO continue to 2.4 and 2.5

2.4 If NO, name of the household head

1. First name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Family name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2.5 If NO, what is the relationship of main respondent to household head?

(select one answer)

[ ] Spouse[ ] Parent [ ] Child [ ] Other family member [ ] Unrelated

**Section 3: household\* composition and on and off-farm activities**

*\* A household includes all persons who typically eat from the same pot for the majority of the year (six months and above). Members who live somewhere else and only come to visit for a period of less than six months are not to be considered household members.*

3.1 How many persons are in your household, including yourself?

[ ]

3.2 For household members 14 years old and under:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Age bracket** | **Number of HH members** | | **Number of HH members who are in formal education** | |
| **Male** | **Female** | **Male** | **Female** |
| Age: 0-5 years |  |  |  |  |
| Age: 6-14 years |  |  |  |  |

3.3 For household members of 15 years old and above:

*Part of the information collected in this section will inform the labour indicator and allow to calculate if there is labour surplus or deficiency*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **HH ID** | **Age** | **Gender** (M/F) | **Relation to head of household\*** | **Working on the farm?**   * No [0] * Yes, at times (part-time) [1] * Yes, farming is main occupation (full-time) [2] | **Off-farm employment?**   * No [0] * Yes, at times (part-time) [1] * Yes, off-farm employment is main occupation (full-time) [2] | **Type off-farm employment**   * Casual labour [1] * Permanent employment [2] * Own business / trade [3] * Other [4] | **Currently in formal education?**   * No [0] * Yes [1] | **Highest level education completed**  **\* \*** |
| HH1 |  |  |  |  |  |  |  |  |
| HH2 |  |  |  |  |  |  |  |  |
| HH3 |  |  |  |  |  |  |  |  |
| HH4 |  |  |  |  |  |  |  |  |
| HH5 |  |  |  |  |  |  |  |  |
| HH6 |  |  |  |  |  |  |  |  |
| HH7 |  |  |  |  |  |  |  |  |
| HH8 |  |  |  |  |  |  |  |  |
| HH9 |  |  |  |  |  |  |  |  |
| HH10 |  |  |  |  |  |  |  |  |

\* Head (0); Spouse (1); Parent (2); Child (3); Other family member (4); Unrelated (5)

\*\* None (0); primary school (1); secondary school (2); college / vocational training (3); university (4)

**Section 4: Farming**

*The purpose of this question it is to understand how much the farmer relies on farming activities for his household income. The enumerator should try to pull out the answer from the farmer using a participatory approach. For example he/she could ask: do you have alternative sources of income or do you rely only on agriculture? If the farmer indicates he/she relies only on agriculture than this is option 1. If not, try to understand how much the alternative sources of income are as much as the agricultural ones (option 3), or much more (option 4) or much much more (option 5) or much less (option 2).*

4.1 How important is your farm produce (crops only) for your household income?

1. [ \_ ] The household relies entirely (> 90%) on the farm produce for its cash income
2. [ \_ ] The household relies for a major part (50% to 90%) on the farm produce for its cash income
3. [ \_ ] The household relies for about half (40% to 50%) of its cash income on the farm produce
4. [ \_ ] The household relies for a minor part (less than a half 10% to 40%) of its cash income on the farm produce
5. [ \_ ] The household relies for a very minor part (less than < 10%) of its cash income on the farm produce

4.2 What is the unit that you use to measure farm size

[ \_ ] Hectares

[ \_ ] Acres

[ \_ ] Other (specify\_\_\_\_\_\_\_\_\_\_\_\_\_)

4.3 How much land is your household farming?

*The purpose of this question is to understand the size of the farm and its ownership. The enumerator could ask the farmer first what the total surface of the farm is. Then he/she should ask if all this land is owned and farmed by the household, or part of it. If part is owned, ask what amount is owned and farmed. Ask then if any of the land that the farmer owns is rented out/or sharecropped, or borrowed.*

*If the farmer mentioned that part of his land is not owned then ask if he is renting it, and if so how much, or if is sharecropping or borrowing. Ask also if any of the land he/she farms is communal land.*

|  |  |
| --- | --- |
|  | Farm size n. |
| Total land owned |  |
| Owned and farmed by household |  |
| Owned and rented out |  |
| Owned and sharecropped out |  |
| Owned and lent/ borrowed out |  |
| Not owned, rented in |  |
| Not owned, sharecropped in |  |
| Not owned, borrowed |  |
| Communal land |  |
| Other, specify |  |

4.4 Rank the crops you cultivated last season according to importance for a) food security and b) household income

|  |  |  |
| --- | --- | --- |
| **Name of crop** | | |
| Food security | | Household income |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

4.5 What is the total area cultivated with maize the last cropping season?

*\_\_\_\_\_\_\_\_\_\_\_\_\_*

4.6 When was the maize planting date?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Jan | Feb | March | April | May | June |
| July | August | September | October | November | December |

4.7 When was the date of the last harvest?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Jan | Feb | March | April | May | June |
| July | August | September | October | November | December |

4.8 Production and sale

*We will be recording information only for the last cropping season and only for maize and for the entire area cultivated*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Production and sale** | | | | | | |
| Quantity harvested in the last season | | Quantity sold in the last season | | | Quantity consumed by the household in the last season | |
| Quantity | Unit of measure | Quantity | Unit of measure | Price per unit | Quantity | Unit of measure |
|  |  |  |  |  |  |  |

**Section 5: Control practices**

*The following questions are only for maize and for the last cropping season.*

5.1 For the crop health problem called fall armyworm, or locally called ‘ADD local name could you tell us if you have put in place for maize any intervention?

1. Yes [ ] continue 5.2
2. No [ ]

5.2 If YES, what intervention did you put in place for fall armyworm, or locally called ‘ADD local name for maize?

*Tick the options mentioned by the farmer [if option 5 ‘fertilizer application’ is chosen, ask question 5.4*

*If option 14 ‘pesticide’ is selected ask question 5.5].*

|  |
| --- |
| **Fall armyworm**  Local name in Ghana: ADD local name  Local name in Zambia: ADD local name |
| 1. Early planting (plant early so the plant is well established when the pest comes, and it has more changes to survive) 2. Plant resistant varieties/tolerant varieties 3. Crop rotation - recommended to rotate with non-host plants e.g. legumes, cotton, sunflower, etc (*to avoid build up of pests*) 4. Frequent weeding (*to remove alternative host plants*) 5. Improve soil fertility - manure or chemical fertilizer (*to stimulate strong plant growth and ability to sustain pest attack*) – **if selected ask question 5.4** 6. Apply ash on larvae when larvae are really young (once the larvae gets old it is too late). 7. Application of Neem based products powder – can be mixed (1:1) with dry clay or sawdust – wood dust (*natural insecticide and irritants*) 8. Intercrop maize with non-hosts non legumes crops like cassava or others 9. Intercrop maize with non-host legumes like cowpea or others 10. Trap cropping: use a trap plant e.g. Napier grass-Urubingo as a border crop (*to draw/’pull’ pest out of maize crop and into this preferential host plant*) 11. Push-pull: use a trap plant e.g. Napier grass-Urubingo as a border crop (*to draw/’pull’ pest out of maize crop and into this preferential host plant*) and intercrop with a repellent plant e.g. legume such as *Desmodium* ( *to ‘push’ repel pest out of the crop area*) (these options work also alone but more effective together) 12. Remove crop residues that are damaged by pests or diseases (*to remove pest from the field and avoid build up in following year*) 13. Uproot and burning of infected plants (*to destroy larvae and pupae*) 14. Application of Pesticide – **if selected ask question 5.5** 15. Handpicking egg masses and caterpillars (*needs labour and only effective for early larval stages* *before larvae enter the stem)* 16. Replanting 17. Biological control options - Encouraging natural enemies (predators & parasites) into field by planting their host plants in field boundaries – the plants are the ones that host the predators and parasites. Larvae can be eaten by birds, spiders, ants and killed by parasitic wasps, wasp lays its eggs inside the larvae and when they grow they kill the larvae. 18. Other (specify) |

5.3 Do you think the intervention [*in ODK name of interventions selected in 5.2 appears*] used for maize was successful?

*Ask for each of the interventions selected*

1. Extremely successful
2. Somewhat successful
3. Not successful

5.4 If you apply fertilizer, could you tell us:

*This question is intended for application of fertilizer linked with management of FAW for maize. We will be recording information only for the last cropping season.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Fertilizer** | | | |
| Type  *1.manure/organic 2. chemical* | Quantity | Unit | Price per unit |
|  |  |  |  |

5.5 If you apply pesticide, could you tell us:

*This question is intended for application of pesticide linked with management of FAW for maize. We will be recording information only for the last cropping season.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Pesticide** | | | |
| Name / active ingredient | Quantity | Unit | Price per unit |
|  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Activity** | n. of times of treatment | n. HH members involved on spraying\* | Hours per day\* | n. of days per week\* | n. of weeks in the last cropping season\* | n. hired people\* | Hours per day\* | n. of days per week\* | n. of weeks in the last cropping season\* | Cost of hired labour\* | |
| Amount\* | Unit\* |
| Spraying pesticide |  |  |  |  |  |  |  |  |  |  |  |

*\* Ask only for the last treatment/spray done, not for all treatments/sprays*

5.6 Were there other interventions you wanted to apply but did not?

1. [ \_ ] YES

2. [ \_ ] NO

5.7 If YES, specify what other intervention the farmer wanted to apply but did not

Put list *5.2 here again*

5.8 For each of the intervention the farmer wanted to apply but did not, specify the reason for not applying

1. Too expensive
2. Time consuming
3. Inputs are not available
4. Inputs are too far and not easily accessible
5. Did not know where to obtain the inputs
6. I didn’t understand how to apply the recommendation
7. It is not up to me to make the decision to do things differently
8. Other – specify *[free text]*

**Section 6: Impact**

6.1 At what stage of crop development were your maize plants affected?

*Show to the farmers the picture with the 8 stages of growth and ask to select the correspondent stage.*

1. 0
2. 0.5
3. 1
4. 2
5. 3
6. 4
7. 5
8. 6-7

6.2 How much of your area [*ODK should report number indicated in 4.5 ]* cultivated with maize was affected by FAW- add local name during the last cropping season? *The enumerator should try to pull out the answer from the farmer using a participatory approach*

1. A very minor part (less than < 10%)
2. A minor part (less than a half 10% to 40%)
3. About a half (40% to 60%)
4. A major part (60% to 90%)
5. The entire area (> 90%)

6.3 In the field that was affected, what proportion of plants were affected?

1. A very minor part (less than < 10%)
2. A minor part (less than a half 10% to 40%)
3. About a half (40% to 60%)
4. A major part (60% to 90%)
5. The entire area (> 90%)

6.4 How much maize do you think you would have harvested without the FAW or add local name last season?

1. [ ] n.
2. Unit *use same menu of choices for units of 4.2*

**Section 7: Information sources / input received for pests and diseases**

7.1 Through which sources did you receive information on FAW?

*Choose from the menu of options the sources of information on plant pests and diseases for farmers*

|  |  |
| --- | --- |
| **Sources of information** | **What was the source of the information** |
| My own experience |  |
| Another household member |  |
| Neighbours, friends and family |  |
| Agricultural programs on the radio |  |
| Agricultural programs on the TV |  |
| Extension officers |  |
| Books/flyers/pamphlets |  |
| Agro-dealers |  |
| Demonstration plots / field days |  |
| Farmers promoters |  |
| NGO (specify) |  |
| Agricultural shows |  |
| Newspapers/magazines/bulletins |  |
| Mobile sms and voice services |  |
| Farmers field schools (FFS) – farmers facilitators |  |
| Plant clinics/plant doctors |  |
| Women’s’ group |  |
| Other, specify |  |

7.2 Did you or any member of the household received any input for free during the last season?

1. Yes [ ] continue with 7.3
2. No [ ] go to section 8

7.3 If YES, what input did you received and from whom?

|  |  |  |
| --- | --- | --- |
| Input type | Received [yes or no] | Source of input  1. NGO  2. Government  3. Other (specify) |
| Fertilizer |  |  |
| Seeds (specify for what crop) |  |  |
| Pesticide |  |  |
| Other (specify) |  |  |

**Section 8: Shocks**

*This section will help to understand if the farmer went through any other shock pest/disease and non pest/disease related.*

8.1 Have you experience major crop failure during the last cropping season?

1. [ \_ ] YES continue to 8.2

2. [ \_ ] NO continue to section 9

8.2 What were the reasons that caused crop failure?

[ \_ ] Drought or insufficient water

[ \_ ] Excess rain or flood

[ \_ ] Pests/diseases

[ \_ ] Hailstones

[ \_ ] Crop destroyed by livestock/theft

[ \_ ] Sickness (human)

[ \_ ] Other (specify)

**Section 9: Access to credit and other sources of cash**

9.1 Do you, or any of your household, use any of the following sources of credit or cash?

[ \_ ] Formal loans (bank)

[ \_ ] Small loans through micro-credit

[ \_ ] Informal loans (from family members or friends)

[ \_ ] Credit for (agricultural) inputs through traders / buyers

[ \_ ] Remittances or gifts (from all sources e.g. family, NGOs etc)

[ \_ ] Renting out of machines / equipment

[ \_ ] Renting out of land

**Section 10: Scouting**

10.1 How far is your closest maize field? [*Question simply to ask with no answer attached to it, and move to next question*]

1. Within 10 min walk. Continue to question 10.2

2. Further than 10 min walk if selected, do not continue with section and finish questionnaire

10.2 What is the current phenological stage of the field of maize?

*Ask this question to the farmer but confirm in person once in the field*

1. 0
2. 0.5
3. 1
4. 2
5. 3
6. 4
7. 5
8. 6-7
9. Harvested

*Only select once confirmation in the field*

*If questions 1 or 9 are ticked, do not continue with section and finish questionnaire*

10.3 Is the plot irrigated?

Yes [ ] No [ ]

10.4 Count the number of plants that present symptoms of FAW.

*In order to count the number of plants affected by FAW, sample 20 consecutive plants searching for plants with FAW symptoms (selecting them randomly) from at least 5 locations in the field.* *On plants with symptoms check for FAW larva to confirm its presence*

10.5 How many plants presented FAW symptoms in each transect?

|  |  |  |
| --- | --- | --- |
| Transect # | N of plants with symptoms | N of plants with larva |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

10.5 What damages did you see for each transect

*Repeat symptom table below after each transect row filled out in question 10.5*

*Checkboxes showing*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Windowing effect on leaves |  | FAW larva seen with raised dots on body segments |  | Plant toppled over |  |
| Deep feeding of leaves in funnel |  | Insect seen - skin smooth to the touch |  | Hole in the side/middle of the cob without larva inside |  |
| Sawdust-like frass near funnel |  | Hole in the side/middle of the cob with larva inside |  | FAW larva seen with inverted Y shaped white marking on its head |  |

10.6 Field sample collected?

For each sample of larva collected, put questionnaire ID on tube. Up to three per questionnaire

1. Yes [ ] [*if yes, show automatic ID for this questionnaire to add manually on the tube]*
2. No [ ]

**End – Thank you very much for your time and the information provided which will be treated confidentially.**